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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,579	08/31/2000	Vishnu K. Agarwal	98-0616.13	4026

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EXAMINER	
EVERHART, CARIDAD	
ART UNIT	**PAPER NUMBER**
2825	

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/652,579	AGARWAL, VISHNU K.	
	Examiner	Art Unit	
	Caridad M. Everhart	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *80-84 and 88-110* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *80-84 and 88-110* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *24* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The IDS filed 9-2-03 has been reviewed. The cited references are relevant to applicant's disclosure as background references. Li, for example, discloses treatment of a conductive layer with an atmosphere that includes B and the subsequent deposition of a further conductive layer.

Newly found references are applied in rejections follow below.

~~***Claim Rejections - 35 USC § 102***~~

~~The~~ following is a quotation of the appropriate paragraphs of 35 U.S.C. ~~102~~ that form the basis for the ~~rejections~~ under this section made in this ~~Office~~ action:

> A person shall be entitled to a patent ~~unless~~ –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 80,81,88, 89, 96-101, and 105-110 are rejected under 35 U.S.C. 103(a) as being unpatentable over.Sekine, et al. ("Sekine")(US 5,62,888) in view of Zenke (US 5,700,710).

Sekine discloses the steps of depositing a first conductive layer(col. 5, lines 10-14), exposing the wafer in situ to a reducing environment(col. 5, lines 36-44), depositing a second conductive layer(col. 5, lines 35-45). Because of the "comprising" language and the fact that the claim is silent with respect to the order or spatial relationship of the films, there is no order recited or implied in the claims with respect to the first or second conductive films. Therefore, the tungsten film being the one treated in situ with the reducing gas of silane reads on the claims whether the first or second conductive film is recited.

Sekine is silent with respect to exposing one of the layers to phosphine, although Sekine does disclose that the first conductive layer is doped polysilicon(col. 5, lines 65-67), and Sekine further discloses HSG(col. 1, lines 53-57).

Zenke discloses that HSG is formed as the first electrode of a capacitor with anneal of the polysilicon in an atmosphere that includes phospine(col. 4, lines 57-65).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have formed the HSG layer in the method taught by Zenke because Sekine teaches that the lower electrode may be in the form of doped polysilicon and Sekine

teaches that it is known in the art to use HSG for its large area, which is the goal of the invention disclosed by Sekine, and Zenke teaches a known method to form HSG.

Claims 83,91,94, and 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekine in view of Zenke as applied to claim 80 above, and further in view of Chen, et al. ("Chen")(US 6,077,742).

Sekine in view of Zenke is silent with respect to the borosilicate glass .

Chen discloses a layer of borosilicate glass over capacitors(col. 9, lines 62-67).

One of ordinary skill in the art would have been motivated at the time of the invention to have used a layer of borosilicate glass in the invention disclosed by Sekine in view of Zenke because Sekine teaches an interlayer insulating film(col. 4, lines 53-57) and borosilicate glass is well known in the art, as shown by the fact that Chen suggests this as an interlayer insulating film.

Claims 82,84,90,92,95,102, and 104 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekine in view of Zenke as applied to claim80 above, and further in view of Lee, et al. ("Lee")(US 2001/0001501A1).

Sekine in view of Zenke does not teach a third conductive layer of polysilicon, although Sekine teaches a third conductive layer of a silicide of a metal such as W(col. 6, lines 45-60).

Lee teaches forming a third conductive layer of polysilicon in a capacitor in which the upper layer can be a multilayer including silicide or polycide of refractory metal, which would include of W.

One of ordinary skill in the art would have been motivated to have formed the upper layer in the invention disclosed by Sekine in view of Zenke to include polysilicon in view of the disclosure made by Lee because Sekine teaches that the upper layer may be multilayer and can include silicide, which includes silicon, and Lee teaches that the layer may be a multilayer including polycide, which includes silicide. Because both teach that the capacitor includes W, and because one of ordinary skill in the art would have been motivated to have substituted the silicide taught by Sekine with polycide as taught by Lee to be interchangeable with silicide.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Caridad M. Everhart whose telephone number is 703-308-3455. The examiner can normally be reached on Monday through Fridays 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on 703-308-1323. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

12-13-03

C Everhart
PRIMARY EXAMINER